

9564 (noted as JU 59-9564) in view of JP 58-201347. This rejection is respectfully traversed.

Applicant's independent claim 1 recites a chip type light emitting device comprising, a board of nearly rectangular shape in a plane view, first and second electrode patterns formed at both ends in a longitudinal direction of a surface of said board, a light emitting diode (LED) chip mounted on said first electrode pattern, a metal wire connected to said LED chip and said second electrode pattern by wire bonding, and a translucent resin mold which seals said LED chip and said metal wire, wherein one notch is formed at one end of said board at said first electrode pattern side and two notches are formed at both sides of the other end of said board at said second electrode pattern side, each of said electrode patterns is formed so as to cover said one notch or two notches through an entire width of said board, and the positions at both ends of said translucent resin mold are arranged to the positions at both ends in a longitudinal direction of said board.

JU 59-9564 discloses a LED chip mounted on an aluminum substrate with a transparent (translucent) resin 11 such as epoxy or silicone protecting the LED chip 7 and the wire 8. The resin 11 enhances the luminosity of the LED chip by operating as an optical lens. The transparent resin 11 is provided by potting or printing. As shown in Fig. 9, a frame 12 is adhered to a peripheral region of the LED chip and the wire to provide a form for the transparent resin 11 to be filled in.

Fig 4 of JU 59-9564 discloses notches (through holes) formed at both side end portions of the chip type LED. However, no electrode pattern 6 is formed to cover the notch portions. That is, the notches go completely through the substrate 5 and the

electrode pattern 6. If the frame 12 is sufficiently expanded to coincide with the ends of the substrate, the frame 12 will encroach upon the notches and the translucent resin 11 will penetrate through the notches, resulting in an aberrant resin lens 11. Therefore, the purpose and intent of JU 59-9564 will be defeated. Alternatively, if the frame 12 is removed and the resin is disposed over the entire length of the substrate, the resin 11 will overflow into the notch areas and, again the resin lens 11 will become distorted. Thus, the resin cannot be made to cover the entire longitudinal length of the board.

In view of the above, it is respectfully submitted that JU 59-9564 does not disclose or suggest at least the features of "one notch is formed at one end of said board at said first electrode pattern side and two notches are formed at both sides of the other end of said board at said second electrode pattern side, each of said electrode patterns is formed so as to cover said one notch or two notches through an entire width of said board, and the positions at both ends of said translucent resin mold are arranged to the positions at both ends in a longitudinal direction of said board", as recited in Applicant's independent claim 1. Additionally, Applicant respectfully submits that JP 58-201347 does not make up for the deficiency in JU 59-9564.

JP 58-201347 discloses a leadless chip electronic part that is offset from the center of the substrate 27 due to the spacing required between the chip element 22 and the front electrode 13 to accommodate the wire bond 23. However, as seen in the cover page figure, an electrode pattern is not provided over the notches. That is, the notches are exposed as they are in JU 59-9564.

Furthermore, the electrode pattern does not cover the entire width of the board. Regarding the width of the electrode pattern, Applicant respectfully submits that since

the electrode pattern of JP 58-201347 is used to contact a separate terminal placed only in the centrally located "notch" area, there is no advantage to be gained in "widening" the electrode pattern beyond the centrally located "notch" area. Accordingly, Applicant respectfully submits that there would be no motivation to widen the electrode pattern to cover the width of the board, since the ends are not in contact with a separate terminal.

Based on the above, it is readily apparent that JP 58-201347 does not supply the subject matter lacking in JU 59-9564 and does not disclose or suggest all the features of Applicant's claimed invention. Thus, Applicant respectfully submits that JU 59-9564 and JP 58-201347, individually or in combination, do not disclose or would have rendered obvious Applicant's claimed invention.

Claims 2 and 4 depend from claim 1. Accordingly, for at least the above reasons, Applicant respectfully requests the withdrawal of the rejection of claims 1, 2 and 4 under 35 U.S.C. § 103(a).

The Office Action rejects claim 3 under 35 U.S.C. § 103(a) over JP 59-9564 (noted as JU 59-9564) and JP 58-201347, and further in view of Okazaki (U.S. Patent No. 5,814,837). This rejection is respectfully traversed.

Okazaki discloses a compact light-emitting device, wherein an LED 14 is disposed over a substrate 17 with electrode patterns 12 installed on the surface of the substrate 17. Conductive paste 13 is applied to the electrode patterns 12 and the LED 14 to form a bond. Okazaki's approach to the prior art problem is to completely eliminate the wire bond and utilize a conductive paste for direct connection of the LED to the electrode patterns.

Therefore, though Okazaki discloses a board size of less than 1.6 mm x 0.8 mm, one of ordinary skill would not modify Okazaki to have a wire bond, since Okazaki's ~~entire purpose is to eliminate the need for a wire bond.~~ Given Okazaki's motivation against wire bonds, it is respectfully submitted that one of ordinary skill would not look to the teachings of Okazaki and modify the board of Okazaki to use a wire bond, nor look to JU 59-9564 and JP 58-201347 to modify them without removing their wire bonds. Additionally, Okazaki's embodiments are disclosed as having a centrally located notch which is similar to the teachings of JP 58-201347.

Therefore, it is respectfully submitted that notwithstanding the disclosure of Okazaki, one of ordinary skill would not be motivated to modify JU 59-9564 and JP 58-201347 to render obvious Applicant's invention. Accordingly, is respectfully submitted that Okazaki, JU 59-9564 and JP 58-201347, individually or in combination, do not disclose or would have rendered obvious Applicant's claimed invention.

Claim 3 depends from claim 1. Thus, for at least the above reasons, Applicant respectfully requests the withdrawal of the rejection of claim 3 under 35 U.S.C. § 103(a).

The Office Action rejects claims 1, 2, 4 and 5 under 35 U.S.C. § 103(a) over Figs. 3 or 4 of the Acknowledged Prior Art (APA) in view of JP 49-48267. This rejection is respectfully traversed.

JP 49-48267 discloses a structure that has two notches at both ends in the length direction wherein the two notches do not serve a common potential. In contrast, Applicant's invention discloses two notches at a common end in the width direction that share a common potential. That is, while there are two notches in JP 49-48267, the

electrode pattern between the two notches cannot be formed to cover both notches over an entire width of the board. To do so would defeat the electrical isolation between the notches required in JP 49-48267. Therefore, notwithstanding the Office Action's assertion that it would be obvious to modify the APA with the teachings of JP 49-48267, Applicant respectfully submits that the electrical isolation required in the notches of JP 49-48267 would result in the modification to the APA to have notches that are electrically isolated. This would not result in the Applicant's claimed invention.

Accordingly, it is respectfully submitted that based on the above, JP 49-48267 does not supply the subject matter lacking in the APA, and, furthermore, there is no motivation to combine the references to result in the Applicant's claimed invention.

Claims 2, 4 and 5 depend from claim 1. Therefore, for at least the above reasons, Applicant respectfully requests the withdrawal of the rejection of claims 1, 2, 4 and 5.

The Office Action rejects claim 3 under 35 U.S.C. § 103(a) over Figs. 3-4 of the APA and JP 49-48267, in view of Okazaki. This rejection is respectfully traversed.

For the same reasons discussed above, Applicant respectfully submits that one of ordinary skill would not be motivated to combine the references. Specifically, Okazaki teaches against using a wire bond which is a required feature of the APA and JP 49-48267. Furthermore, as discussed above, the combination of the APA and JP 49-48267 would not result in the Applicant's invention. Therefore, for at least the same reasons discussed above, Applicant respectfully submits that the APA, JP 49-48267 and Okazaki, individually or in combination, would not disclose or have rendered obvious Applicant's claimed invention.

Claim 3 depends from claim 1. Therefore, for at least the above reasons, the Applicant respectfully requests the withdrawal of the rejection of claim 3.

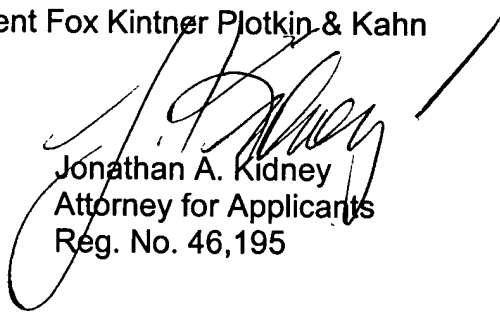
CONCLUSION

In view of the above remarks, Applicant respectfully submits that this application is in condition for allowance. Favorable consideration and prompt allowance is earnestly solicited. Should the Examiner believe anything further is desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact Applicant's undersigned attorney at the telephone number listed below.

In the event this paper is not considered to be timely filed, Applicant respectfully petitions for an appropriate extension of time. The Commissioner is authorized to charge payment for any additional fees which may be required with respect to this paper to Counsel's Deposit Account 01-2300, referring to client-matter number 107400-00017.

Respectfully submitted,

Arent Fox Kintner Plotkin & Kahn


Jonathan A. Kidney
Attorney for Applicants
Reg. No. 46,195

Customer No. 004372
1050 Connecticut Ave. NW
Suite 400
Washington, D.C. 20036-5339
Tel: (202) 857-6481
Fax: (202) 638-4810

JAK:ksm

Enclosures: Marked-Up Copy of Amended Claim

MARKED-UP COPY OF AMENDED CLAIM

1. (Twice Amended) A chip type light emitting device comprising:

~~a board of nearly rectangular shape in a plane view;~~

first and second electrode patterns formed at both ends in a longitudinal direction of a surface of said board;

a light emitting diode (LED) chip mounted on said first electrode pattern;

a metal wire connected to said LED chip and said second electrode pattern by wire bonding; and

a translucent resin mold which seals said LED chip and said metal wire;

wherein one notch is formed at one end of said board at said first electrode pattern side and two notches are formed at both sides of the other end of said board at said second electrode pattern side, each of said electrode patterns is formed so as to cover said one notch or two notches through an entire width of said board, and the positions at both ends of said translucent resin mold are arranged to the positions at both ends in a longitudinal direction of said board.